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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/543,008	07/21/2005	Stefan Huber	112740-1085	2577
29177	7590	10/10/2006	EXAMINER	
BELL, BOYD & LLOYD, LLC P. O. BOX 1135 CHICAGO, IL 60690-1135			KARACSONY, ROBERT	
			ART UNIT	PAPER NUMBER
			2892	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/543,008	HUBER ET AL.	
	Examiner	Art Unit	
	Robert Karacsony	2892	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07/21/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>072105</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 12-14, 16 and 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo et al. (US 6,958,730) in view of Johnson et al. (US 6,456,249).

Nagumo et al. teach a multi-band antenna array for a mobile radio equipment, comprising:

A planar patch antenna (Fig. 1, 11) having a plurality of resonances (col. 7/lines 56-57) and is further coupled to a ground connection (Fig. 1 shows planar patch antenna coupled through impedance matching circuit followed by a signal source followed by ground) and to a high-frequency interface (Fig. 1, 14a, 15 & 22); and

A plurality of parasitic transmitters (Fig. 1, 12 & 13), wherein said transmitters are located marginal to the planar patch antenna (col. 7/lines 29-33) and are each embodied so as to be free of a high-frequency interface (Fig. 1 shows both parasitic transmitters being free of high-frequency interface), whereas the structures of the planar patch antenna are arranged as sheet-type conductor structures (Fig. 1 shows planar patch antenna being sheet-type conductor).

Nagumo et al. fail to teach that the parasitic transmitters are arranged as line-type conductor structures. However, Johnson et al. disclose a parasitic element which may be a

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conductive wire element having a nominal 0.05 inch thickness (Fig. 11, 19; col. 7/lines 36-38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the parasitic element in Johnson et al. as one of the parasitic transmitters of Nagumo et al. in order to have reduced the size of the antenna which, in turn, will have reduced the size of communication devices.

Claim 13: Nagumo teaches at least one parasitic transmitter is provided with a connection to ground (col. 7/lines 41-44).

Claim 14: Nagumo et al. teach all of the limitations of claim 12, as discussed above. Nagumo et al. fail to teach that the plurality of transmitters are provided with a shared connection to ground. However, Johnson et al. disclose a coupling element that operatively connects driven elements to two parasitic elements, all of which are formed as a single stamped metal part (col. 6/lines 42-43), which is, in turn, coupled to a ground plane (col. 6/lines 43-47). Thus, the part may be fabricated using high-speed metal stamping processes (col. 5/lines 64-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the parasitic elements with shared ground connection of Johnson et al. as the parasitic transmitters of Nagumo et al.. "In this manner, a compact antenna assembly is provided which is suitable for incorporation within efficient, high volume production of communication devices. The antenna element may thus be utilized in conjunction with surface mount device (SMD) production techniques (col. 5/lines 65-67 & col. 6/lines 1-3)."

Claim 16: Nagumo teaches a plurality of parasitic transmitters are arranged on opposite sides of the planar patch antenna (Fig. 1; col. 7/lines 31-33).

Claim 21: Wherein the planar patch antenna and the parasitic transmitters are arranged in a plane (Fig. 1 illustrates parasitic transmitters and planar patch antenna arranged in a plane; col. 7/lines 27-34).

Claim 22: Nagumo et al. teach all of the limitations of claim 12, as discussed above. Nagumo et al. fail to teach at least one parasitic transmitter has a spatial extension, emerging perpendicularly out of the plane of the planar patch antenna. However, Johnson et al. teach a parasitic element with legs extending perpendicularly out of a plane of a driven conductor element (Fig. 3) giving the parasitic element an interior region (col. 5/lines 53-55). Such an arrangement would have reduced the overall volume of a communication device by disposing components of a communication device within the interior region (col. 4/lines 52-54). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the parasitic element of Johnson et al. as one of the parasitic transmitters of Nagumo et al. in order to have further reduced the overall volume of a communication device by disposing components of a communication device within the interior region.

3. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo et al. (US 6,958,730) in view of Johnson et al. (US 6,456,249) as applied to claim 12 above, and further in view of Weinberger (US 2001/0050636).

Nagumo et al. in view of Johnson et al. teach all the limitations of claim 12, as discussed above. Nagumo et al. in view of Johnson et al. fail to teach at least one parasitic transmitter is free of connections to ground. However, Weinberger discusses that it would be suitable to have a multi-band antenna composed of a planar inverted-F antenna and patch or micro strip antenna (Fig. 1); [0020], the two antennas being capable of being coupled together by capacitive,

inductive, radiated, or galvanic coupling [0021]. The planar antenna structure requiring only one feed connection and one ground connection [0034]. Freeing the patch or micro strip antenna of ground connection would have provided radiative coupling to the inverted-F antenna. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the ungrounded antenna of Weinberger as the parasitic antenna of Nagumo et al. in view of Johnson et al. with a reasonable expectation of success to have obtained the same results.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo et al. (US 6,958,730) in view of Johnson et al. (US 6,456,249) and Weinberger (US 2001/0050636) as applied to claim 15 above, and further in view of Fang et al. (US 6,788,257).

Nagumo et al. in view of Johnson et al. and Weinberger teach all of the limitations of claim 15, as discussed above. Nagumo et al. in view of Johnson et al. and Weinberger fail to teach that the plurality of parasitic transmitters are located on adjacent sides of the planar patch antenna. However, Fang et al. teach “a main radiating device and a parasitic radiating device, wherein the parasitic radiating device has a concave side which is opposite and partially surrounds the main radiating device (col. 3/lines 63-67; Fig. 3).” The antenna of Fang et al. is capable of operating in dual frequencies (col. 3/lines 35-42). Such an antenna would have reduced the volume of wireless communication products by combining two frequencies in an antenna (col. 1/lines 26- 28). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the parasitic radiating device of Fang et

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al. as one of the parasitic transmitters of Nagumo et al. in view of Johnson et al. and Weinberger in order to have utilized an antenna capable of operating at two frequencies which, in turn, will reduce the size of wireless communication products.

5. Claims 18 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo et al. (US 6,958,730) in view Johnson et al. (US 6,456,249) as applied to claim 12 above, and further in view of Hebron et al. (US 2003/0210188).

Claims 18: Nagumo et al. in view of Johnson et al. teach all the limitations of claim 12, as discussed above. Nagumo et al. in view of Johnson et al. fail to teach at least one parasitic transmitter extends at least partially over two adjacent sides of the planar patch antenna. However, Hebron et al. discloses a parasitic radiator (Fig. 4, 27) extending partially over two adjacent sides of a meander shaped antenna (Fig. 4, 11 & 12). “The meander antenna designed and developed as described in the fourth embodiment of this invention is also associated with the satisfactory gain and bandwidth to cover the operating cellular lower band (AMPS) and the upper band (comprising non-cellular GPS and the upper cellular PCS)[0064].” Such an antenna would have been capable of being used in a multi-purpose handset which have system capabilities of both dual cellular and non-cellular (such as GPS) applications, which is where the technology is evolving towards [0004]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the parasitic radiator of Hebron et al. as one of the parasitic transmitters of Nagumo et al. in view of Johnson et al. in order to have created an antenna for use in a multi-purpose handset which have system capabilities of both dual cellular and non-cellular (such as GPS) applications, which is where the technology is evolving towards.

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Claim 19 & 20: Claims 19 and 20 are rejected for the same reasons discussed above for claim 18. Fig. 4 of Hebron et al. shows a parasitic radiator extending partially over three adjacent sides as well as over four sides of a meander shaped antenna.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Karacsony whose telephone number is 571-270-1268. The examiner can normally be reached on M-F 7:30-5 EST with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RK RK


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SUPERVISORY PATENT EXAMINER